IN THE SPECIFICATION:

Please amend the paragraph beginning at page 1, line 6 as follows:

--Such a magnetron includes, as shown in Fig. 7, a number of vanes 12 mounted radially on the inner wall of a cylindrical anode shell 11 with a cavity provided between any two adjacent vanes and the anode shell 11 and connected alternatively by straps 14 for stabilizing the oscillation in a π mode which all constitute an anode 1. As a cathode 2 is located at the center of the anode 1, the anode shell 11 has pole pieces 3 mounted to both axial ends thereof for applying a magnetic field substantially in parallel to the surface of the cathode 2 across an interaction space 4 between the inner side (at the inner end of the vanes 12) of the anode 1 and the outer side of the cathode 2. This causes electrons from the cathode 2 ~~to be swirled~~ to make circular orbits by the right-angle force of the magnetic field in the interaction space 4 thus introducing energy to the resonant cavities for oscillation. The magnetron is commonly used in a radar system and energized with an anode voltage for pulsing operation.--

Please amend the paragraph beginning at page 1, line 20 as follows:

--In recent years, as a variety of microwave generators have been in use, ~~their generating~~ their generation of spurious radiation is strictly controlled under relevant regulations. It is also a drawback of the pulse magnetron to develop spurious radiation at frequencies close to the fundamental oscillation frequency. When the magnetron used

in a radar system is pulsed, its oscillation output level has a number of other lobes at sidebands in addition to the main lobe in the spectrum shown in Fig. 8. The spectrum is determined by the pulse width provided for actuating the pulse magnetron is not narrower than a spectrum of a Fourier analysis based on a oscillating output waveform. Inversely in general, the spectrum may be wider than its theoretical size due to various causes. Also, the shape of the spectrum is not linearly symmetrical about the fundamental oscillation frequency but may be biased as having a noticeable lobe profile (P) at one sideband, shown in Fig. 8, which causes spurious radiation.--

Please amend the paragraph beginning at page 2, line 10 as follows:

--One of the causes for creating faults in the spectrum such as an unsymmetrical shape or a noticeable lobe at the sideband may be oscillation off the predetermined operating timing at the rise in the pulse magnetron. When the anode voltage is gradually increased, the oscillation of the pulse magnetron will start at a current about 5 to 10 % lower than its rated level. The output is thus 40 to 50 dB lower than the rated level as the oscillation is made at a frequency lower than the fundamental oscillation frequency. Since the pulse magnetron having the above described operating characteristics is pulsed, it is timed at such a lower current range with each pulse rise in the lower side of the fundamental frequency and its output is 40 to 50 dB lower than the rated level. As the result, the frequency spectrum will be unsymmetrical having a noticeable profile of -40 to -50 dBc (decibels) at one sideband.--

The paragraph beginning at page 3, line 6 has been amended as follows:

--As described above, every conventional magnetron exhibits an unfavorable profile close to the fundamental oscillation frequency of the spectrum caused by unwanted oscillation at the rise of pulse, thus ~~making~~ causing an unsymmetrical shape of its spectrum to occur and producing the spurious radiation. It is necessary for reshaping the spectrum of the output of the radar system ~~to install~~ by installing a filter in the radar system. As the radar system is commonly mounted to a higher location in a ship, however, it has to be minimized in ~~the~~ its size and ~~the~~ weight. Also, the filter has to be higher in the dimensional accuracy for passing the fundamental frequency without significant attenuation while filtering undesired frequencies and its cost will hence be increased.--

Please amend the paragraph beginning at page 3, line 17 as follows:

--When the vanes are arranged with their axial ends projecting for compensating for a non-uniformity of the magnetic field across the interaction space, the distance between the anode and the cathode becomes ~~smaller~~ smaller, but the drawback that the oscillation starts at a current lower than the rated level will ~~hardly~~ not be eliminated. As the spurious radiation ~~incitingly~~ occurs at lower currents, unwanted oscillation at the rise of pulse will ~~hardly~~ not be attenuated.--

The paragraph beginning at page 4, line 3 has been amended as follows:

--The pulse magnetron according to the present

invention includes an anode having a number of vanes mounted radially on the inner wall of a cylindrical anode shell thereof, a cathode provided at the center of the anode to face the inner end of each vane, and a pair of pole pieces provided for applying a magnetic field substantially in parallel to the cathode across an interaction space defined between the outer side of the cathode and the inner ends of the vanes. In particular, the pulse magnetron which is pulsed for oscillation is characterized by

$$V_a = 942(r_a^2 - r_c^2)(10^4 b - 10650 / n\lambda) / n\lambda \qquad (1)$$

where V_a is the pulsed anode voltage (in V), r_a is the radius of the anode (the radius in cm of an inscribed circle defined by the inner ends of the vanes), r_c is the radius of the cathode surface (in cm), b is the minimum of the magnetic flux density ~~T~~ (in Tesla) along the axis of the interaction space, n is the (number of divisions (the number of the vanes))/2, and λ is the oscillation wavelength (in cm).--

The paragraph beginning at page 4, line 20 has been amended as follows:

--More specifically, the radius r_a of the inscribed circle defined by the inner ends of the vanes and the radius r_c of the cathode surface which both are determined by the foregoing equation (1) are measured at a point where the magnetic flux density is maximum along the axial direction of the cathode and the height of the vanes. Also, the anode and the cathode are arranged to satisfy at least either (i) increasing the radius of the inscribed circle defined by the inner ends of the vanes to $r_{a'}$ or (ii) decreasing the radius of the cathode surface to $r_{c'}$

at a point the magnetic flux density for both cases (i) and (ii) is minimum ~~as the magnetic flux density is declined~~ along the axial direction of the cathode and the height of the vanes.--

Please amend the paragraph beginning at page 5, line 9 as follows:

--The construction of the pulse magnetron allows the distance between the cathode and the anode at the axial ends of the cathode (the vanes) where the magnetic flux density is maximum to be determined from the minimum of the magnetic flux density along the height of the vanes in the axial direction of the cathode in the interaction space. Also, the inner diameter of the anode and/or the outer diameter of the cathode are adjusted so that the distance between the anode and the cathode increases corresponding to the magnetic flux density which is decreased towards the center of the cathode. As the result, the pulse magnetron can be increased in the impedance thus minimizing ~~the~~ generation of unwanted oscillation at an anode voltage lower than its rated level. When the anode voltage of pulse form is applied, the oscillation starts with the rated level at each pulse in the π mode and its output spectrum can favorably be symmetrical to the main lobe. More particularly, the pulse magnetron can have characteristics close to their theoretical measurements while not exhibiting ~~no~~ an unwanted frequency profile.--

The paragraph heading on page 6, at line 20 has been amended as follows:

--~~DETAILED DESCRIPTION~~ DETAILED DESCRIPTION OF THE INVENTION --

Please amend the paragraph beginning at page 6, line 21 as follows:

--A pulse magnetron according to the present invention will be described in mode detail referring to the relevant drawings. A pulse magnetron according to the present invention may have a construction shown in the cross sectional view of Fig. 1(a) and Fig. 1(b), for example. More specifically, a number of vanes 12 are radially mounted on the inner wall of a cylindrical anode shell 11 thus constituting an anode 1. As a cathode 2 is provided at the center of the anode 1, a pair of pole pieces 3 [see Fig. 1(a)] are mounted to both axial ends of the anode shell 11 for applying a magnetic field substantially in parallel to the cathode 2 across the interaction space 4 between the inner ends of the vanes 12 and the outer side of the cathode 2. The height of the vanes defines the height of the interaction space in the axial direction of the cathode.--

Please amend the paragraph beginning at page 7, line 14 as follows:

--The anode 1 has, as shown in the longitudinal cross sectional view of Fig. 1(a) and the transverse cross sectional view of Fig. 1(b), its anode shell 11 made of non-oxygen copper or the like and joined at the inner wall to the outer ends of the (anode) vanes 12 which are also made of non-oxygen copper or the like. The vanes 12 extend at the other or inner end towards the center of the anode shell 11 and are spaced from each other by the cavity 13 [see Fig. 1(b)]for resonant oscillation at desired frequencies, i.e., the vanes forming a plurality of cavity resonators. The vanes 12 are alternately connected by the straps 14 to vary the π radian phase for ease of the oscillation in the π

mode. The anode 1 may be modified with its anode shell 11 not joined to but formed integral with the vanes 12 by providing slots or cavities.--

At page 8, the paragraph beginning at line 3 has been amended as follows:

-- The cathode 2 is installed concentricly at the center of the anode shell 11 as surrounded by the inner ends of the vanes 12. The interaction space 4 is provided between the outer side of the cathode 2 and the inner ends of the vanes 12 for allowing electrons emitted from cathode to interact. The paired pole pieces 3 are made of a ferromagnetic material such as iron and mounted to both axial ends of the anode shell 11 hence allowing a magnetic field generated by a permanent magnet or electromagnet (these magnets are not shown) to run across the interaction space 4. As an anode voltage is impressed between the anode and the cathode, the electrons are ~~swirled~~ circularly orbited about the cathode 2 by the operation of the magnetic field to transfer energy to the cavities 13 for triggering the oscillation. The magnetron used in a radar system is pulsed using the anode voltage.--

Please amend the paragraph beginning at page 8, line 11 as follows:

--The embodiment shown in Fig. 1 permits the radius of the cathode 2 to be smaller at the center than at the axial ends, then providing a concave form in the longitudinal cross section. More particularly, as shown in Fig. 4, the radius r_c at the axial ends of the cathode 2 is determined with the

radius r_a at the inner side of the anode 1 (the inscribed circle defined by the inner ends of the vanes 12) and the magnetic flux b in the interaction space 4 to satisfy the foregoing equation (1). As the radius r_c' at the center of the cathode 2 is smaller than the radius r_c at the axial ends, the cathode 2 is distanced more at the center than at the axial ends from the inner ends of the vanes 12. The magnetic flux b in the equation (1) is defined as the ~~maximum~~ minimum of the magnetic flux B in the interaction space by the magnetron operation theory, "The basic of microwave technology" by Makimoto et al, Hirokawa Shoten, 1980, twelfth edition, p. 278, formula 10.28~~)~~. The radius r_a of the anode and the radius r_c of the cathode in the equation (1) are determined so that the magnetic flux is maximum along the vanes in the axial direction of the anode. This permits an offset from the theoretical operation to increase of the distance between the cathode and the anode.--

The paragraph on beginning on page 9, line 16 is amended as follows:

--That is, as described above, when the magnetron is pulsed, its anode voltage rises from 0 V to a rated level, remains for a predetermined length of the pulse, and decays. This operation is repeated at every pulse. The oscillation of the magnetron can start when the current is as small as 5 to 10 % of the rated level. Accordingly, the output is then 40 to 50 dB lower than the rated level. Such undesired oscillation at lower frequencies than the fundamental oscillation frequency then continues until the current reaches to its rated level. As the result, the spectrum of the output will be unsymmetrical showing a noticeable profile of -40 to -50 dBc (decibels) at one sideband or any

other unwanted profile deviated from the profile of desired frequencies.--

The paragraph beginning on page 11, line 10 is amended as follows:

--The fact that r_c'/r_a at the center is smaller by 9.1 % than r_c/r_a at the axial ends is determined by the foregoing equation (1) when the magnetic flux density, as shown in Fig. 2, at the center is 88 % the axial ends of the cathode 2. The magnetic flux density may be varied depending on the structure of the magnetron and the shape of and the distance between the pole pieces. However, with the magnetic flux density remaining described as above, the spectrum profile can equally be improved when the cathode 2 is arranged to a concave shape so that r_c'/r_a is smaller by simply 0.3 % than r_c/r_a. Accordingly, the distance between the anode and the cathode is not necessarily modified to match the profile of the magnetic flux density. Also, the pulse magnetron used in a radar system has generally a profile of the magnetic flux density where the smallest is 88 % or more of the maximum. Accordingly, when r_c'/r_a is smaller by 9.1 % to 0.3 % than r_c/r_a, the output spectrum can be improved hence minimizing the generation of spurious radiation. Also, the concave shape of the cathode may be implemented using a quadratic function curve, a combination of linear lines in ~~an mountain form~~ a sequence or the various figuration. Moreover, the radii may be varied not continuously but in steps.--